ISTEP+ Performance Level Descriptors
Mathematics – Grade 7

Grade 7
Pass+

Pass+ students demonstrate advanced mathematical and problem-solving skills. Students solve complex problems with integers, fractions, decimals, ratios, percents, square roots, scientific notation, and the Pythagorean Theorem, and demonstrate expertise in the areas of geometry, measurement, and data analysis and probability. *Pass+* students display highly developed skills with algebra concepts, including writing and solving equations and inequalities. *Pass+* students solve sophisticated problems, support their solutions, and generalize the results to other situations.

Examples of specific knowledge, skills, and abilities for Grade 7 students scoring at the *Pass+* level include:
- Solve complex problems involving any/all of the following: integers, decimals, fractions, ratios, square roots, percents (i.e., discounts, markups, commission, and percent increase and decrease), scientific notation, transformations, scale, similarity, and the Pythagorean Theorem
- Write and solve two-step equations and inequalities and evaluate algebraic expressions
- Solve problems involving linear and non-linear functions, slopes of lines, and situations with constant and varying rates of change
- Find area of 2 dimensional shapes and irregular shapes including semicircles
- Find surface area and volume of right prisms and cylinders
- Organize, analyze, and interpret data in multiple representations, and understand the affect of outliers
- Use tree diagrams to find possible arrangements
- Find the probability of single and disjointed events
- Analyze and solve problems by sequencing, prioritizing, and identifying relevant information; breaking complex problems into simpler ones; using words and symbols to support solutions; using simpler problems to solve more difficult ones; drawing mathematical conclusions; and determining the reasonableness of solutions

Grade 7
Pass

Pass students demonstrate proficient mathematical and problem-solving skills. Students are capable of solving problems with integers, fractions, decimals, ratios, and the Pythagorean Theorem, and they are competent in the areas of geometry, measurement, and data analysis and probability. *Pass* students are skilled with algebra concepts, such as writing and solving equations. *Pass* students experience success when solving problems, communicating ideas, and applying mathematical knowledge to a variety of situations.

Examples of specific knowledge, skills, and abilities for Grade 7 students scoring at the *Pass* level include:

- Solve problems involving any/all of the following: integers, fractions, decimals, ratios, basic square roots, percents (i.e., discounts, markups, and commission), scientific notation, transformations, scale, and the Pythagorean Theorem
- Write and solve two-step equations and evaluate algebraic expressions
- Identify slopes of lines
- Find area of 2 dimensional shapes and irregular rectangular based shapes
- Find surface area and volume of right prisms and cylinders
- Organize, analyze, and interpret data in multiple representations
- Use tree diagrams to find possible arrangements
- Find the probability of a single event
- Solve problems by breaking complex problems into simpler ones; making calculations in word problems; using words and symbols to support solutions; and determining the reasonableness of solutions

Grade 7
Did Not Pass

Did Not Pass students demonstrate limited mathematical and problem-solving skills. Students may have difficulty when solving problems with fractions, percents, and square roots, and the complexity of algebra may be an obstacle for *Did Not Pass* students. Also, math topics including geometry, measurement, and data analysis and probability can be a stumbling block for students. *Did Not Pass* students may have difficulty making decisions about how to approach problem-solving situations, how to communicate their ideas, and how to apply mathematical knowledge to other situations.

Examples of specific knowledge, skills, and abilities for Grade 7 students scoring at the *Did Not Pass* level include:
- Solve basic problems involving fractions, decimals, and scientific notation
- Evaluate numerical expressions
- Apply order of operations rules
- Find area and perimeter of rectangles
- Organize, analyze, and interpret data in bar graphs
- Find the probability of a single event
- Identify important information and make calculations when solving basic word problems